



United States Department of Agriculture  
Natural Resources Conservation Service

helping people help the land

# Quenching California's Thirst

***Even the best irrigation system won't deliver water saving results if it's not working optimally. Water audits to test the efficiency and condition of an irrigation system are an excellent solution.***

Rick Adinolfi of Crazy Horse Ranch in Temecula, California, is all about beverages: wine, beer and soft drinks. Adinolfi grows a diverse array of local, organic ingredients—hops, blood oranges, cara cara, avocado honey and more—that go into flavoring specialty beers and soft drinks. He also



*Rick Adinolfi (left) shows NRCS' Bob Hewitt a blood orange grown at the ranch that helps to flavor specialty beers.*

produces wine from Pinot noir grapes, a relative rarity for this part of California. And beverages, as everyone knows, begin with water.

Three years ago the Rancho California Water District (RCWD), like many water districts in Southern California was challenged to conserve 30 percent of its water overall. Agriculture makes up 27 percent of the District's water use and helping growers like Adinolfi find ways to squeeze all the water savings possible out of their operations was a priority.

Bob Hewitt with USDA's Natural Resources Conservation Service (NRCS) has worked with growers like Adinolfi to conserve water and other natural resources for more than 40 years, and he has seen a lot of change in irrigation technology. "Over the years most growers have converted to the highly efficient micro sprinklers, so it was a challenge to figure out how we were going to achieve the new reductions," Hewitt says.

However, the Bureau of Reclamation (Reclamation) and Hewitt's agency, NRCS, had recently joined forces in projects throughout California, to match water savings improvements at the infrastructure (water district) level with on farm improvements, where NRCS assists. With the goal of collaborating for optimum water delivery and use, RCWD successfully applied to participate in this unique venture.

RCWD received funding from Reclamation to install weather stations throughout the District, greatly increasing the detail and reliability of climate information available to farmers.



*Overall, Adolfini estimates his water savings since working with NRCS at about 40-50 percent. Efficient drip irrigation (above) provides water for these wine grapes.*

“If it’s going to rain, or even if humidity is high, you can reduce water schedules,” says Hewitt, “whereas windy or high temperature conditions will require more water to keep the crop going.” Without this information some farmers will simply water by a schedule year round. “The trees don’t need the same water in January they need in July,” Hewitt noted.

Even the best irrigation system doesn’t deliver water saving results if it isn’t working optimally, so RCWD offered Adinolfi and the other growers in the District the opportunity for free water audits, testing the efficiency and condition of their irrigation system. A local Resource Conservation District, with considerable expertise in this work, was hired to do the audits.

Most of the above ground portions of the system are vulnerable to weathering, coyotes and other conditions and unless growers walk their orchards often, they may not notice leaks and other problems, says Hewitt.

These audits became the basis for Hewitt and others to engage farmers in discussions on both hardware and management that would help them save water. Much of the cost of needed improvements was borne by NRCS’s Environmental Quality Incentives Program, EQIP, or by the water district, using funds from a California Department of Water Resources grant.

At the Crazy Horse Ranch, Hewitt and Adinolfi teamed up to make some changes that have not only saved water, but have also saved labor costs, improved the health of the crops, and made his business more sustainable, according to Adinolfi.

“We removed much of the grapefruit, leaving just a few trees to furnish zesting ingredients for beer—and replaced them with grape vines which use far less water, especially with today’s technology,” says Adinolfi. Based on the audits, Hewitt and Adinolfi also made improvements in the hardware to improve the DU—or distribution uniformity.

Uniformity of the system is key to conservation since farmers must irrigate to give enough water to all trees, including those with the least effective delivery components, thus potentially overwatering the rest of the trees. As the DU rises, so does water savings. Since the NRCS-RCWD program has begun, Hewitt says the DU for agricultural

producers he works with has gone from an average of 50-60 (poor to average) to above 85% (good to excellent).

Adinolfi and Hewitt have just begun a new EQIP contract for the avocado grove at the top of the steep property. “We will maintain the micro sprinklers in use but we will put them in smaller sets to better maintain the pressure and increase the DU,” says Hewitt.



*Hops (above) grown at Crazy Horse Ranch are used by specialty beer producers.*

They are also adding soil moisture sensors to Adinolfi’s property, which will give him a very accurate way of knowing—for his crops, soil types, and weather—how long he can hold off irrigating without harming his plants. They are also “topping the trees” a practice that keeps the trees to a more manageable height, reducing both water use and labor. Overall Adinolfi estimates his water savings since working with Hewitt at 40-50 percent. “And I think we can do more,” he says.

Since the collaboration began in 2012, Hewitt has worked with over 300 growers to discuss water saving methods and about 80 of these have turned into EQIP contracts doing work similar to those of Adinolfi.

“The Ag community has done a great job of improving the efficiency with which they utilize their water resources,” says Justin Haessly of RCWD.

Although a few growers have left the area or pursued other opportunities most of the efficiency improvements have been achieved through the collaboration of the farmers, NRCS, RCWD and Reclamation. And whether with beer, wine or soft drink, that’s success we can all drink to.